

### REMARKS

This is a full and timely response to the non-final Office Action mailed by the U.S. Patent and Trademark Office on January 11, 2006. Claims 1-9 remain pending in the present application. Claims 10-19 are withdrawn. In view of the following remarks, reconsideration and allowance of the application and claims are respectfully requested. Each rejection presented in the Office Action is discussed in the remarks that follow.

#### Election /Restriction

Applicants acknowledge the finality of the restriction requirement. Applicants have withdrawn claims 10-19. Applicants reserve the right to prosecute claims 10-19 in a continuation or divisional application.

#### Rejection Under 35 U.S.C. § 102

Claims 1-9 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U. S. Patent No. 6,711,195 to Chang *et al.* (hereafter *Chang*). A proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *See, e.g., In re Paulsen*, 30 F.3d 1475, 31 USPQ2d 1671 (Fed. Cir. 1994); *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). Alternatively, anticipation requires that each and every element of the claimed invention be embodied in a single prior art device or practice. *See, e.g., Minnesota Min. & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992). The test is the same for a process. Anticipation requires identity of the claimed process and a process of the prior art. The claimed process, including each step thereof, must have been described or embodied, either expressly or inherently, in a single reference. *See, e.g., Glaverbel S.A. v. Northlake Mkt'g & Supp., Inc.*, 45 F.3d 1550, 33 USPQ2d 1496 (Fed. Cir. 1995). Those elements must either be inherent or disclosed expressly. *See, e.g., Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 7 USPQ2d 1057 (Fed. Cir. 1988); *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987). Those elements must also be arranged as in the claim. *See, e.g., Richardson v. Suzuki Motor*

Co., 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989); *Carella v. Starlight Archery & Pro Line Co.*, 804 F.2d 135, 231 USPQ 644 (Fed. Cir. 1986). For anticipation, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. See, e.g., *Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ2d 1001 (Fed. Cir. 1991).

Accordingly, the single prior art reference must properly disclose, teach or suggest each element of the claimed invention.

It is alleged in the Office Action that *Chang* discloses:

- a light-emitting device, comprising:
- an active region (104, Fig. 5) configured to generate light in response to injected charge; and
- a current confinement structure (332, Fig. 5) located to direct charge into the active region and including a strain compensating layer adjacent an oxide-forming layer (346, Fig. 5 and Col. 11, lines: 54-67).

Regarding claim 2, *Chang* further discloses the light-emitting device of claim 1, in which the current confinement structure comprises an additional strain compensating layer adjacent the oxide-forming layer (fig. 5 and Cols. 7-8), where the oxide-forming layer is sandwiched between the strain compensating layers.

*Chang* discloses a semiconductor device structure that includes a strain-compensated active region. Specifically, *Chang* discloses that “[t]he strain compensation provided between the quantum-well layer 116 and the material of the substrate 102 by many of the barrier layer materials described above enables a quantum-well structure that includes many quantum-well layers to be fabricated with an acceptably-low density of defects, notwithstanding the lattice mismatch between the GaAsSb or InGaAsSb of the quantum well layers and the semiconductor substrate 102.” See *Chang*, col. 10, lines 25-33.

The structure in *Chang* clearly defines the strain compensating layers as sandwiching the quantum-well layer. Specifically, *Chang* states that “[i]n the example shown, the quantum-well structure 106 is composed of the single quantum-well layer 116 sandwiched between the substrate-side barrier layer 114 and the remote-side barrier layer 118.” See *Chang*, col. 10, lines 16-19. *Chang* then goes on to mention that multiple quantum-well layers may be sandwiched between multiple barrier layers. *Chang* also states that “[t]he lattice constant of GaP is less than the lattice constant of GaAsSb, GaAs and InP. Accordingly, InGaP having an indium fraction  $y$  less than a third threshold can provide strain

compensation between the quantum-well layer 116 and the substrate 102 when the substrate material is GaAs or InP.” *See Chang*, col. 8, lines 10-15.

Importantly, *Chang* fails to disclose, teach or suggest at least “a current confinement structure located to direct charge into the active region and including a strain compensating layer adjacent an oxide-forming layer,” as recited in claim 1.

Applicants respectfully disagree with the statement in the Office Action that *Chang* discloses “a current confinement structure (332, Fig. 5) located to direct charge into the active region and including a strain compensating layer adjacent an oxide-forming layer (346, Fig. 5 and Col. 11, lines: 54-67).” Applicants respectfully submit that nowhere does *Chang*, in Fig. 5, col. 11, lines 54-67, or elsewhere, disclose, teach or suggest Applicants’ “current confinement structure located to direct charge into the active region and including a strain compensating layer adjacent an oxide-forming layer.”

Applicants respectfully submit that what the Office Action is apparently referring to as a current confinement structure (332, Fig. 5), is in actuality a distributed Bragg reflector. Specifically, *Chang* states “the VCSEL 300 is composed of the substrate-side distributed Bragg reflector (DBR) 330, the active layer 104 and the remote-side DBR 332, epitaxially grown, in order, on the substrate 302.” *See Chang*, col. 10, lines 39-42. Further, *Chang* does include a high-aluminum fraction AlGaAs layer 346 shown as part of the remote-side DBR 332. *Chang* also includes a conductive region 348 resulting after oxidation of the high-aluminum fraction AlGaAs layer 346. However, nowhere does *Chang* disclose, teach or suggest “a current confinement structure located to direct charge into the active region and including a strain compensating layer adjacent an oxide-forming layer,” as recited in claim 1.

Indeed, the high-aluminum fraction AlGaAs layer 346 of *Chang* is separated from any strain compensating layer in the active region 104 by at least an intervening layer (not numbered) in the DBR 332. Further, assuming that the layer 334 of higher refractive index material and the layer 336 of lower refractive index material constituting an exemplary layer pair in the substrate-side DBR 330 is representative of the layer pairs of the remote-side DBR 332, neither of the layers 334 or 336 are described by *Chang* as strain compensating.

While *Chang* discloses a conductive region 348 (*See Chang*, col. 12, line 8) and strain compensation provided between the quantum-well layer 116 and the material of the substrate 102 (*See Chang*, col. 10, lines 25-26), these concepts and related structures are disclosed in different structural portions of the device in *Chang*. Specifically, the conductive region 348 is part of the remote-side DBR 332, and the strain compensation is provided *only* within the

quantum-well structure 106, and specifically between the quantum-well layer 116 and the barrier layers 114 and 118. The quantum-well structure 106 is separated from the high-aluminum fraction AlGaAs layer 346 by an intervening layer in the DBR 332 and by an intervening layer (cladding layer 120, Fig. 3A of *Chang*) in the active layer 104. *See Chang*, col. 10, lines 16-32, and FIG. 5.

Applicants also respectfully disagree with the statement in the Office Action that:

Regarding claim 2, *Chang* further discloses the light-emitting device of claim 1, in which the current confinement structure comprises an additional strain compensating layer adjacent the oxide-forming layer (fig. 5 and Cols. 7-8), where the oxide-forming layer is sandwiched between the strain compensating layers.

Applicants respectfully submit that nowhere does *Chang*, in Fig. 5, cols. 7-8, or elsewhere, disclose, teach or suggest Applicants' device "in which the current confinement structure comprises an additional strain compensating layer adjacent the oxide-forming layer, where the oxide-forming layer is sandwiched between the strain compensating layers," as recited in claim 2.

As stated above, *Chang* fails to disclose, teach or suggest a current confinement structure including a strain compensating layer adjacent an oxide-forming layer.

Accordingly, Applicants respectfully submit that independent claim 1 is allowable over *Chang*, and furthermore, that dependent claims 2- 9, which depend either directly or indirectly from allowable independent claim 1, are allowable for at least the reason that they depend from an allowable independent claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1998).

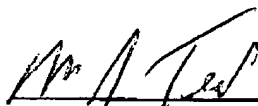
### CONCLUSION

Should the Examiner have any comment regarding the Applicants' response or believe that a teleconference would expedite prosecution of the pending claims, Applicants request that the Examiner telephone Applicants' undersigned attorney.

Respectfully submitted,

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